

## REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Rejection of Claims 1 Under 35 USC §102(e) in view of U.S. Patent No. 6,125,198 (Onda)

This rejection is respectfully traversed on the grounds that the Onda patent fails to disclose or suggest a method of determining stereo disparity:

- a. in which the similarity measure is calculated based on direct comparison of pixel intensities in a reference window, *i.e.*, on a “matching pixel count” of “pixels in the reference window which are similar in intensity” (instead, the method of Onda compares quantized values of pixel intensities, which is not the same as comparing the pixel intensities themselves);
- b. in which the reference window used for the similarity measure includes a set of pixels centered on a reference pixel (the reference window of Onda has an even length and therefore no center reference pixel); and
- c. in which the displacement of the search window having the largest similarity is taken as the disparity (instead, the method of Onda uses the similarity to obtain a histogram, and then calculates the peak of the histogram to obtain the overall disparity).

With respect to the similarity calculation, claim 1 recites

*(a) Calculating a similarity measure between a reference window including a set of pixels centered on the reference pixel and each of a group of search windows in the search image which is of a same shape as the reference window and displaced from the reference window within a predetermined search range, wherein a matching pixel count, which is the number of pixels in the reference window which are similar in intensity to corresponding pixels in a search window, is used as the similarity measure between the reference window and said search window. . .*

Thus, claim 1 specifically recites that the method of the invention compares pixel intensities in respective reference windows having respective centered reference pixels.

In contrast, the method of Onda uses a one-dimensional reference window capable of being divided by two. Because the window has an even number of pixels, it cannot have a set of pixels “centered on the reference pixel” as claimed (for example, if there are four pixels, and one is deemed to be the “center,” then there has to be one pixel on one side and two pixels on the other side of the reference, and the remaining pixels are therefore not “centered on the reference pixel.”

Furthermore, instead of simply “matching pixel count” or “number of pixels . . . similar in intensity,” as claimed, Onda calculates the “similarity” by using the equation  $\sum \beta K(PN)^k + \sum rK(ZN)^k$ , where PN represents the total number of pixels having the evaluation result “P,” and ZN represents the total number of pixels having the evaluation result “Z,” and in which P and Z are selected, as explained in col. 6, lines 11-15 of the Onda patent, applying the thresholds TH1(>0) and TH2(<0) to quantize the pixels, and dividing the quantized pixels into groups p, z, and m, assigning evaluation result P to groups p and m, and evaluation result Z to group z. The results of this procedure are clearly different from and not equivalent to the results of simply matching similar intensity pixels, as claimed.

Finally, with respect to the similarity calculation, it is noted that Onda requires a validation step involving validating the equation when  $\sum \beta K(PN)^k$  is larger than a third predetermined threshold TH3(>0). The claimed intensity comparison of pixels on either side of a centered reference requires no such validation.

With respect to the “disparity determination,” claim 1 recites a step (b) of “*determining a displacement between the reference window and a search window which yields a largest similarity measure as the stereo disparity for the reference pixel.*” In contrast, Onda uses a “highest similarity” to calculate a histogram, which is then used to determine the disparity. In particular, before calculating similarity in the manner described above, the method of Onda divides a left image and a right image into several blocks which a size MxL, after which the method of Onda compares quantized pixels of a one-dimensional window having an even

Serial Number 09/623,516

number of pixels according to the above-equation, and searches a first region which has the largest similarity in a respective "block," a second region which has the second largest similarity in the "block," and so forth. Instead of simply taking the search window displacement which has the largest similarity as the disparity, the method of Onda takes the disparities in each "region" as "standards," constructs a histogram of the "standards," and takes the peak of the histogram as the valid disparity of a block.

Because the method of Onda uses different reference windows, and calculates similarities and disparities according to different procedures than the claimed method, with different results, it is respectfully submitted that the Onda patent does not anticipate the invention recited in claim 1, and withdrawal of the rejection of claim 1 under 35 USC §102(e) is respectfully requested.

Having thus overcome the sole rejection made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

BACON & THOMAS, PLLC



By: BENJAMIN E. URCIA  
Registration No. 33,805

Date: April 5, 2004

BACON & THOMAS, PLLC  
625 Slaters Lane, 4th Floor  
Alexandria, Virginia 22314

Telephone: (703) 683-0500

NWB:S:\Producer\baulPending 1...PKUKIM 623516a01.wpd